BEHIND BARS: CORRECTIONAL CONTACT INVESTIGATIONS



Sarah Bur, RN, MPH

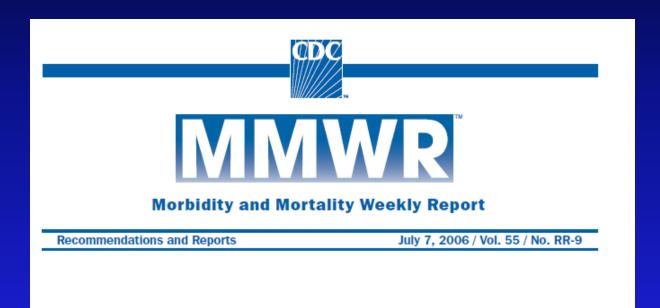
Federal Bureau of Prisons

Infection Prevention & Control Officer

Objectives

- Discuss the steps in conducting a contact investigation in a correctional setting
- Identify key elements of an index case interview in a correctional setting
- Identify the role of the contact investigation team regarding communicating about the investigation.

Contact Investigation Steps



Prevention and Control of Tuberculosis in Correctional and Detention Facilities:
Recommendations from CDC

The Steps



- 1. Notify correctional and health department officials
- 2. Conduct an index case chart review
- 3. Interview the index case
- 4. Identify the infectious period
- 5. Convene the contact investigation team and develop a communication plan
- 6. Obtain index case housing, movement, work and school history
- 7. Tour exposure sites

The Steps (2)

- 8. Prioritize contacts
- 9. Develop contact lists



- 11. Evaluate inmate and staff contacts
- 12. Calculate infection rate and determine need for expansion of CI
- 13. Refer high priority contacts that were transferred/released.
- 14. Summarize the contact investigation.



So let's climb the stairs

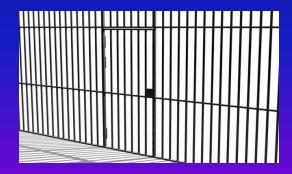


Case Study: Background

- Sept. 1, 2012
 - Index case: 25 year old inmate from Mexico reports to state prison "X" medical unit with:
 - Cough for the previous 5 months waking him up at night
 - Denies any history of injury or other respiratory problems.
- September 2nd: CXR. Wet read by physician: bilateral apical infiltrates with consolidation and pleural effusion.

Case Study: Background (2)

- September 2, 2012
 - Arranged for direct admit to local hospital (transported with respiratory protection)
- September 4th: AFB smear positive x 2 (4+ & 2+)
- September 5th: RIPE
 treatment initiated
- NAAT = Mtb complex

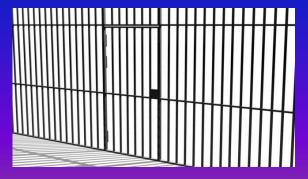


1. Notify Correctional and Local Health Department Officials

- As soon as a TB suspect or case is identified in a correctional facility:
 - Notify local health department
 - Begin communication with internal and external correctional management officials

1. Notify Correctional and Local Health Department Officials

- September 2, 2012
 - Warden of state prison "X" notified of suspected case...need to transport inmate with respiratory precautions
 - Local health department notified of suspected TB case



2. Conduct an Index Case Chart Review

- TST History
- History of exposure to active TB, LTBI
- Clinical notes regarding TB-related symptoms
- Weight history
- CXR findings
- Laboratory findings (AFB, NAATs, other tests)
- HIV
- Other medical conditions
- Cultural or other important psychosocial information

2. Conduct an Index Case Chart Review

- TST May 2, 2012 = 0 mm (intake to prison X)
- Denied TB symptoms at intake
- □ Treated in July, 2012 for community acquired pneumonia (with Levoquin) → Symptoms improved on treatment
- Weights: 18# weight loss in past 4 months
- HIV negative
- Sep 2, 2012, CXR: bilateral infiltrates with consolidation and cavitation
- AFB smear positive x 2/ NAAT + Mtb complex

3. Interview the Index Case

Goal

- Obtain information to determine infectious period
- Identify contacts
- At least one face-to-face interview
- Stress confidentiality
- Opportunity to provide TB education and to answer patient's questions
- Prepare for interview by learning about patterns of movement in the institution

3. Interview the Index Case (3)

- Key elements of an interview in a correctional setting
 - Review daily pattern of activities (TV, cards, movies, music room, etc.)
 - Work/school/church/medical visits
 - Any close associates, not in housing unit
 - Any recent visitors (family, lawyers, other)
 - Any staff with close contact
- Tailor your questions to the specific institution

3. Interview the Index Case

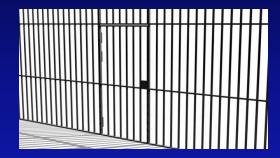
LHD Correctional Liaison interviewed case at local hospital:

- No history of exposure to TB disease
- Remembers having positive TST in 2005—while in jail -- never treated
- Other medical conditions: anemia
- TB symptom history:
 - Reported cough for last 5 months → started while in Local Jail B in early April.
 - Fever/ night sweats / no hemoptysis
 - Has lost approximately 25 lbs since March

3. Interview the Index Case (2)

Risk factors identified:

- Born in Mexico
- Homeless prior to incarceration on January 22nd



(no contact with young children or known HIV infected)

- Excessive alcohol use
- Typical day at prison X:
 - Morning- worked food service, 4am 12 noon, 5 days per week.
 - Mid-day- watched TV in TV room and played cards on housing unit A
 - Evening- chow / watched TV

3. Interview the Index Case (3)

Education:

- Not currently enrolled in any classes at prison X Work:
- Worked AM shift as food service worker preparing & serving breakfast

Worship:

Twice weekly, 1 hour Jehovah's Witness meeting

Friends

 Identified 4 friends that he played cards with every day: John, Spike, Nicco, Fernando

4. Identify the Infectious Period

Focuses the investigation's time period

 Identifies contacts with exposure while the case was likely infectious

DO NOT proceed with the CI until an infectious period has been identified

Estimating Onset of Infectious Period

| TB Symptoms | AFB sputum smear positive | Cavitary Chest Radiograph | Estimated Onset of Infectious Period |
|----------------|------------------------------------|---------------------------------|--|
| Yes | No | No | 12 weeks before symptom onset or first |
| Yes | Yes | Yes | positive findings consistent with TB |
| | | | disease, whichever is longer |
| No | Yes | Yes | 12 weeks before first positive finding |
| | | | consistent with TB disease |
| No | No | No | 4 weeks before date of suspected TB |
| | | | diagnosis |

Closing the Infectious Period

- The infectious period is closed when further transmission of TB is unlikely....
- In correctional facilities → usually the date the case was isolated.

4. Identify the Infectious Period

Beginning of infectious period

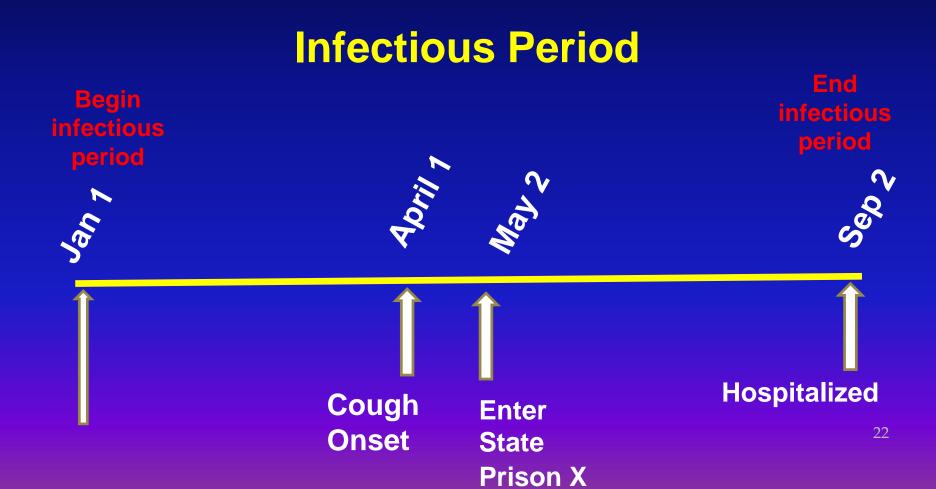
- Onset of cough:
 - April 1, 2012
- 90 days before cough onset:
 - January 1, 2012

End of infectious period:

Date hospitalized: September 2, 2012



4. Identify the Infectious Period



5. Convene Contact Investigation Team

- As soon as the suspect or case is diagnosed, convene the CI team
 - Medical Director and/or treating physician
 - Institution's Infection Control Nurse/Public Health Nurse and other important key staff
 - Correctional system communicable disease officials
 - Custody officials
 - Local and or State public health
 - Correctional Liaisons

5. Convene the Contact Investigation Team (2)

- Agenda for the initial meeting:
 - Purpose of team / roles of specific members
 - Purpose of meeting
 - Stress confidentiality and possible media attention
 - Discuss index case's clinical presentation (e.g. infectiousness, isolation, infectious period, current and future placement etc.)
 - Discuss the purpose of a contact investigation (CI) and start planning for it.
 - Ongoing meetings

5. Convene the Contact Investigation Team (3)

Develop a Communication Plan

- Employees
- Union
- Inmates
- Press



5. Convene Contact Investigation Team

- State prison "X" where the exposure occurred
 - Infection Control Nurse/PHN
 - Clinical Director
 - Health Services Administrator
 - Associate Warden

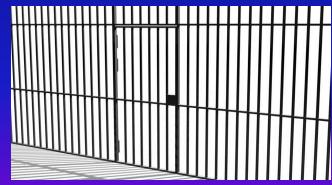


- State Health Department TB staff
- State Prison system Infection Control Coordinator



5. Convene Contact Investigation Team (2)

- Met via teleconference at first weekly
- Daily communication in small meetings with State TB Control & facility infection control nurse
- Developed plan for internal communication with staff & inmates
 - Staff Email
 - Recall
 - Inmate
 - Town Hall on Unit A
 - Union daily briefings



6. Obtain Index Case Housing, Movement, Work & School History

- Request index case information for duration of infectious period
- Request due date for return of information

6. Obtain Index Case Housing, Movement, Work & School History

Movement:

- January 22 May 2, 2012 Local Jail "B"
- May 2, 2012 Arrived at State prison "X"
- September 2 Transported to the hospital

Housing:

 Only in 1 cell in housing unit – "A" the entire time in state prison "X"

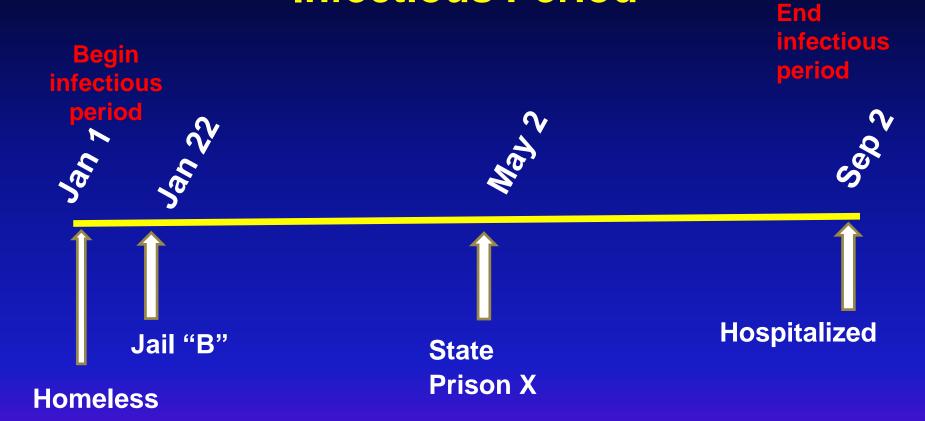
■ Work:

 Food service worker; July 1 – September 2 – morning shift; 4 am-12 noon

School:

No classes

Infectious Period



7. Tour Exposure Sites

Tour all the sites where the index case lived, worked and spent prolonged amounts of time while incarcerated

- Important to get #'s of inmates and staff who are regularly at these sites
- Note the physical make up of the site:
 - Size, cell vs. dorm setting, TV room, etc.
 - Ventilation, windows, AC, high ceilings

7. Tour Exposure Sites

- Housing Unit A
- Older facility-two tiers high, open in the center
 - Two tiers of 2 person cells (35 cells per tier)
 - Large day room in center
 - Very crowded 140 inmates
 - 15' x 20' TV room with low ceiling chairs close together
 - Air recirculated within housing unit but not to adjacent housing unit
- Large kitchen -- with adjacent chow hall that holds 300 inmates seated. Air recirculated in kitchen/chow hall

8. Prioritize Contacts

Consider:

- Infectiousness of the index case
- Circumstances of the exposure
 - Environment where transmission likely occurred
 - Frequency and duration of exposure
- Susceptibility of the contacts
 - Immune status, age, other medical conditions
- Define who is considered a contact

Identify High Risk Contacts

- High risk contacts are most likely to progress to TB disease if infected, they are:
 - HIV positive persons
 - Persons on immunosuppressive therapy, esp. anti-TNF alpha inhibitors
 - Persons with these medical conditions
 - Diabetes, silicosis, post gastrectomy
 - Children under 5 (visitors, or prior to incarceration)
- Generally these contacts are evaluated regardless of the amount of exposure

8. Prioritize Contacts

- 1. High risk contacts (4)
 - 3 HIV + / 1 taking Humira (Anti-TNF alpha)
- 2. Cell-mate (1), Housing unit friends (4)
- 3. Housing unit inmates (148)
- 4. Co-workers morning food service (46)
- 5. Religious group (15)
- 6. Staff contacts (78)

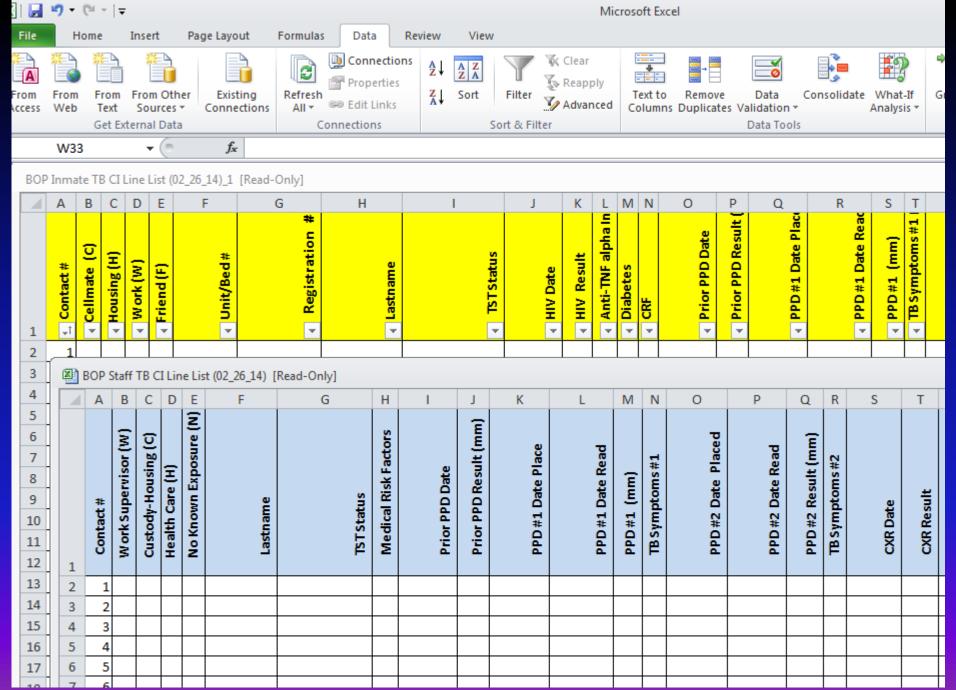
(custody, HCWs, food service supervisor)

9. Develop Contact Lists

- Each correctional system will have a different type of system for tracking inmate movement
 - Most institutions use computerized records
 - May be a programming challenge to identify past history of inmates who were housed or worked with a TB case
 - This process may occur at the institution or at headquarters

9. Develop Contact Lists (2)

- Can take a while to obtain accurate data to create an accurate list
 - While waiting, obtain list of current housing unit → usually most accessible list and identify only the exposed inmates
- Input inmate contact information on the contact roster
 - Places of exposure: housing, work, school, friends, other
- Input staff contact information on a separate roster
 - Places of exposure: unit custody, health care worker, work supervisor, teacher, worship leader, other



| id-Only] | | | | |
|------------------|----------|--------------------------------|--------------|----------|
| 6 | Н | | | J |
| < Registration # | Lastname | TeTetatio | 13 1 3 cards | HIV Date |
| | | | ~ | |
| | | Prior Positive Baseline Neg | | |
| | | Follow-Up Neg | | |
| | | Convertor | | |
| | | | | |

9. Develop Contact Lists

| Α | В | С | D | Е | F | G | | Н | I | J | М | N |
|----------|--------------|-------------|------------|----------|---------------------|-------|-----------|----------------|-----------|------------|------|----------|
| Contact# | Cellmate (C) | Housing (H) | Friend (F) | Work (W) | Religious Group (R) | | Unit/Bed# | Registration # | Lastname | TST Status | AIIV | Anti-TNF |
| 1 | | Н | | | | A-123 | | 11111- | Jackman | | P | |
| 2 | | | | W | | F-107 | | 22222- | Busky | | P | |
| 3 | | Н | | | | A-070 | | 33333- | Rodriguez | | P | |
| 4 | | Н | | | | A-092 | | 44444 | Beck | | | Α |
| 5 | C | Н | | | | A-098 | | 55555- | Magana | | | |
| 6 | | Н | F | | | A-098 | | 66666- | Gaspy | | | |
| 7 | | Н | F | | | A-111 | | 77777- | Chalkley | | | |
| 8 | | Н | F | | | A-142 | | 88888 | Vichness | | | |
| 9 | | Н | F | | R | A-131 | | 99999 | Garcia | | | |

Priority # 1
High Risk Contacts

Priority # 2
Cell mates/
Friends

10. Review Medical Records of High-Priority Contacts

- TST/IGRA history
- Previous CXR results and dates
- History of LTBI or active TB disease treatment
- HIV test results
- Current medical history (HIV, diabetes, TNF alpha medications, organ transplants)
- Recent medical visits for possible TB "like" symptoms

10. Review Medical Records of High-Priority Contacts

#1 High Risk Contacts (HIV/Anti-TNF)

| Α | В | С | D | Е | F | G | Н | T. | J | K | L | M | N | 0 | Р | Q | R |
|-----------|--------------|-------------|------------|----------|---------------------|-----------|----------------|-----------|------------------|---------------|----------|-----|----------|----------|-----|----------------|----------------------|
| Contact # | Cellmate (C) | Housing (H) | Friend (F) | Work (W) | Religious Group (R) | Unit/Bed# | Registration # | Lastname | TSTStatus | Birth Country | HIV Date | HIV | Anti-TNF | Diabetes | CRF | Prior PPD Date | Prior PPD Result (mn |
| 1 | | Н | | | | A-123 | 11111- | Jackman | | US | | P | | | | 7/12/11 | 0 |
| 2 | | | | W | | F-107 | 22222 | Busky | Prior Pos | US | 1/7/11 | P | | | | 12/12/11 | 23 |
| 3 | | Н | | | | A-070 | 33333- | Rodriguez | ! | MX | | P | | | | 9/15/11 | 0 |
| 4 | | Н | | | | A-092 | 44444 | Beck | | US | | | Α | | | 8/7/11 | 0 |

10. Review Medical Records of High-Priority Contacts

#2 Cell-mate / Friends

| Α | В | С | D | Ε | F | G | Н | 1 | J | K | L | M | N | 0 | Р | Q | R |
|-----------|--------------|-------------|------------|----------|---------------------|-----------|----------------|----------|-----------|---------------|----------|-----|----------|----------|-----|----------------|----------------------|
| Contact # | Cellmate (C) | Housing (H) | Friend (F) | Work (W) | Religious Group (R) | Unit/Bed# | Registration # | Lastname | TSTStatus | Birth Country | HIV Date | HIV | Anti-TNF | Diabetes | CRF | Prior PPD Date | Prior PPD Result (mn |
| 5 | C | Н | | | | A-098 | 55555- | Magana | | M) | none | | | | | 7/15/11 | 0 |
| 6 | | Н | F | | | A-098 | 66666 | Gaspy | | US | none | | | | | 8/12/11 | 0 |
| 7 | | Н | F | | | A-111 | 77777- | Chalkley | | US | 12/10/11 | N | | | | 4/10/12 | 0 |
| 8 | | Н | F | | | A-142 | 88888 | Vichness | Prior Pos | US | 7/4/11 | N | | | | 7/2/10 | 15 |
| 9 | | Н | F | | R | A-131 | 99999 | Garcia | | МХ | none | | | | | 1/13/12 | 0 |

11. Evaluate Inmate and Staff Contacts

- High risk contacts
 - Symptom screen, TST/IGRA, HIV, CXR, and sputa if indicated
- All other identified high priority contacts
 - Symptom screen, TST/IGRA, HIV tests, CXR and sputa if indicated
- Follow-up evaluations in 8-10 weeks after exposure ended, if baseline TST/IGRA negative

11. Evaluate Inmate and Staff Contacts

- Priority # 1, (4) high risk inmates evaluated ASAP with
 - CXR & TST & symptom screen
- □ Priority #2: (4) friends & (1) cell mate
 - Prior TST Positive: Symptom screen
 - Prior TST Negative: TST & symptom screen
 - CXR if TST positive or symptoms
- Staff evaluation may or may not take place depends on transmission

- This step occurs after initial evaluations are complete
- Know average annual conversion rates to compare conversion rate for this CI
- If the conversion rate is higher than expected, you may need to expand the CI
- Decide if referrals should be made for the high priority contacts released to the community

| 4 | В | С | D | Е | F | I | J | М | N | Т | U | ٧ | AB |
|---|--------------|-------------|------------|----------|---------------------|-----------|--------------|------|----------|-----------------|------------|---------------------|------------|
| | Cellmate (C) | Housing (H) | Friend (F) | Work (W) | Religious Group (R) | Lastname | TSTStatus | AIIV | Anti-TNF | PPD#1 Date Read | PPD#1 (mm) | TB Symptoms #1 (Y/I | CXR Result |
| 1 | ₩ | ¥ | þ | 7 | Þ | ¥ | ▼ | * | * | ¥ | Þ | ¥ | ¥ |
| 2 | | Н | | | | Jackman | Convertor | £ | | 9/6/12 | 7 | N | NEG |
| 3 | | | | w | | Busky | Prior Pos | P | | | | Z | NEG |
| 4 | | Н | | | | Rodriguez | Baseline Neg | £ | | 9/6/12 | 0 | N | NEG |
| 5 | | Н | | | | Beck | Baseline Neg | | Α | 9/6/12 | 0 | N | NEG |

Priority #1
High Risk 1/3 = 33%

Evaluation for treatment of LTBI for all 4 high risk contacts

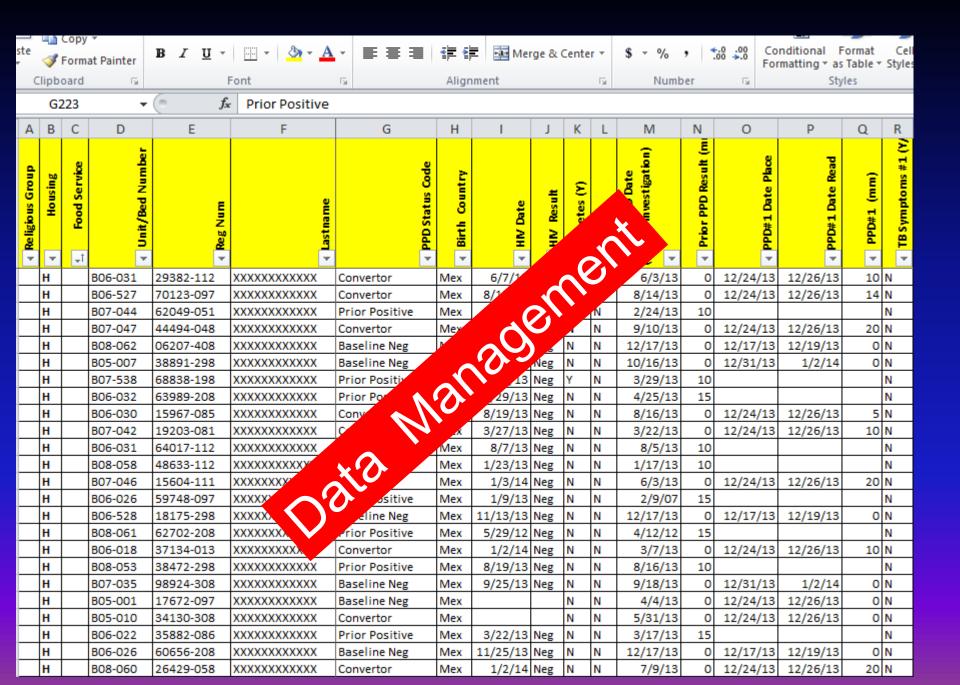
| 1 | В | С | D | Е | F | I | J | M | N | Т | U | ٧ | AB |
|----|--------------|---------------|--------------|------------|---------------------|------------|--------------|-------|------------|-----------------|--------------|---------------------|------------|
| 1 | Cellmate (C) | < Housing (H) | ← Friend (F) | < Work (W) | Religious Group (R) | ∢ Lastname | TST Status | √ HIV | ∢ Anti-TNF | PPD#1 Date Read | → PPD#1 (mm) | TB Symptoms #1 (Y/I | CXR Result |
| 6 | С | Н | | | | Magana | Convertor | | | 9/6/12 | 14 | N | NEG |
| 7 | | Н | F | | | Gaspy | Convertor | | | 9/6/12 | 20 | N | NEG |
| 8 | | н | F | | | Chalkley | Baseline Neg | N | | 9/6/12 | 0 | N | |
| 9 | | н | F | | | Vichness | Prior Pos | N | | | | N | |
| 10 | | н | F | | R | Garcia | Baseline Neg | | | 9/6/12 | 0 | N | |
| 11 | | | | | | | | | | | | | |

Priority #2 Friends/Cellmates: 2/4 = 50%

Annual TST Conversion Rate = 2%

July = 3% & August 3.5%

| Priority | Exposure | Total | Prior | TSTs | TST | % |
|----------------|---------------|--------|---------|--------|------------|-----|
| | | Number | Pos TST | Placed | Convertors | |
| 1 | High Risk | 4 | 1 | 3 | 1 | 33% |
| 2 | Cell M/Friend | 5 | 1 | 4 | 2 | 50% |
|) 3 | Housing | | | | | |
| 4 | FS Workers | | | | | |
| 5 | Religious G | | | | | |
| | | | | | | |
| 6 | Staff | | | | | |



STAFF

- Target high risk
- Categorize by exposure type
- Challenging with multiple shifts
- Try to avoid testing the worried well

| С | D | Е | F | G | Н | 1 | J |
|----------------------|----------------------|-------------------|----------|------------|------------------------|-------------------------------|------------------|
| Custody (Housing Uni | ← Health Care Worker | No Known Exposure | Lastname | TST Status | ■ Medical Risk Factors | Prior PPD Date (before CI) | Prior PPD Result |
| С | | | Blom | Prior Pos | | 12/2/07 | 22 |
| С | | | Aker | | | 1/15/12 | 0 |
| | Н | | Shacker | • | | 1/15/12 | 0 |
| | | N | Gutierre | Prior Pos | | 11/5/11 | 10 |
| С | | | Brown | | | 2/1/12 | 0 |
| С | | | Phillip | | | 2/5/12 | 0 |

| Priority | Exposure | Total | Prior | TSTs | TST | % |
|----------|---------------|--------|---------|--------|------------|-----|
| | | Number | Pos TST | Placed | Convertors | |
| 1 | High Risk | 4 | 1 | 3 | 1 | 33% |
| _ 2 | Cell M/Friend | 5 | 1 | 4 | 2 | 50% |
| 3 | Housing | 148 | 48 | 100 | 23 | 23% |
| 4 | FS Workers | | | | | |
| 5 | Religious G | | | | | |
| | | | | | | |
| 6 | Staff | 78 | 18 | 50 | 1 | 2% |

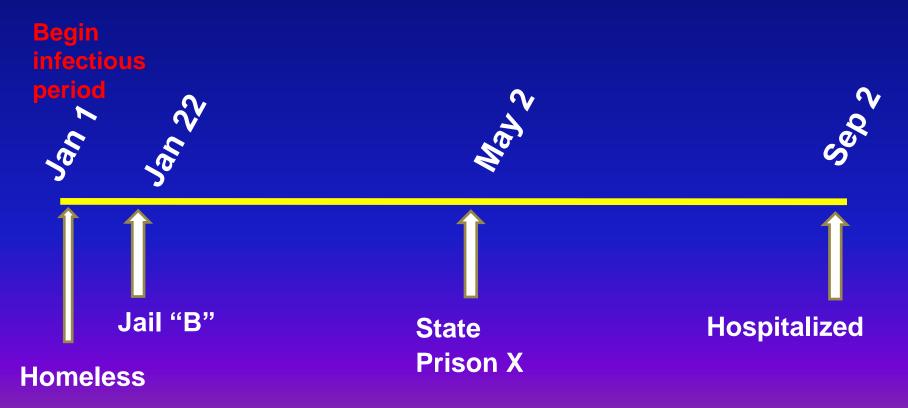
| Priority | Exposure | Total | Prior | TSTs | TST | % |
|----------|---------------|--------|---------|--------|------------|-----|
| | | Number | Pos TST | Placed | Convertors | |
| 1 | High Risk | 4 | 1 | 3 | 1 | 33% |
| 2 | Cell M/Friend | 5 | 1 | 4 | 2 | 50% |
| 3 | Housing | 148 | 48 | 100 | 23 | 23% |
| 4 | FS Workers | 46 | 16 | 30 | 4 | 13% |
| 5 | Religious G | 15 | 5 | 10 | 0 | 0% |
| | | | | | | |
| 6 | Staff | 78 | 18 | 50 | 1 | 2% |

12. Refer High Priority Contacts that were Transferred/Released

- Referrals for all <u>high risk</u> contacts should be made as soon as possible
 - Ask LHD or State PH to assist with these referrals to:
 - Other correctional facilities
 - In the community
- Referrals for <u>high priority</u> contacts transferred to other correctional facilities
- If transmission is documented, determine if referrals should be made to the contacts now residing in the community
 - Follow-up of contacts that are in the community is a low yield activity
- Recidivism is a contact investigation tool

12. Refer High Priority Contacts that were Transferred/Released

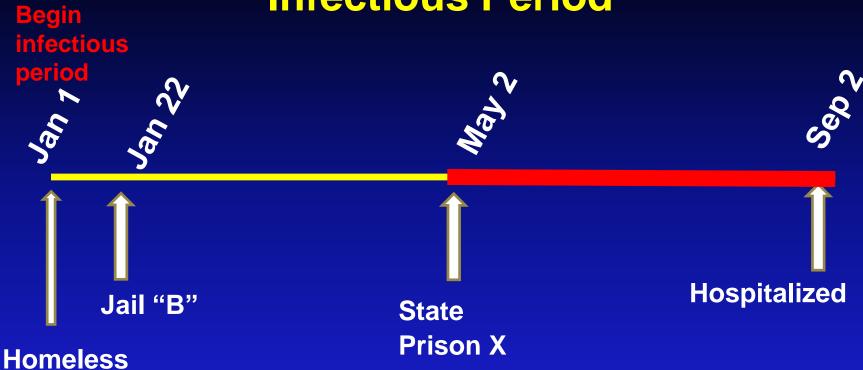
Infectious Period



Infectious Period Begin infectious period Hospitalized State **Prison X** Jail "B" **Homeless** Jail B and Local Health Department B

- Jail B and Local Health Department B notified of need for contact investigation there.
- Notified as soon as there is evidence of transmission at State Prison X

Infectious Period



- State Prison X Transfers / Releases
 - 28 Housing Unit/FSW Contacts
 - 12 Transferred to other state facilities -> referred
 - 16 Released notifications to LHDs

14. Summarize Contact Investigation

- Important to discuss with the CI team
 - Outcome of the CI, (e.g. other cases, transmission, LTBI)
 - What went well, what didn't
 - Lessons learned
 - Changes for the next TB contact investigation

14. Summarize Contact Investigation

| Priority | Exposure | Total Number | Prior Pos TST | Total TST 1&2 | Convertors TST 1&2 | % | Transfer/ Release |
|----------|----------------|-----------------|------------------|------------------|-----------------------|-------------|----------------------|
| 1 | High Risk | 4 | 1 | 3 | 1 | 33% | 0 |
| 2 | Cell M/Friends | 5 | 1 | 4 | 2 | 50 % | 0 |
| 3 | Housing | 148 | 48 | 90 | 28 | 31 % | 10 |
| 4 | FS Workers | 46 | 16 | 25 | 6 | 24% | 5 |
| 5 | Religious G | 15 | 5 | 5 | 0 | 0% | 5 |
| | | | | | | | |
| 6 | Staff | 78 | 18 | 55 | 1 | 2% | N/A |

STAFF: Testing Rate = 55/60 eligible = 92%

2 TST convertors referred to private MD for follow-up

14. Summarize Contact Investigation

- 41 Inmates eligible for treatment of LTBI
 - 38 Inmate TST Convertors
 - 3 High risk (presumptive treatment)
- 5 (12%) refused treatment
- 36 Started Treatment
 - 32 INH/RPT (12 week regimen)
 - 4 INH (release date prior to 12 weeks)

References

- CDC MMWR, July 7, 2006. "Prevention and Control of Tuberculosis in Correctional and Detention Facilities"
- CDC MMWR, December 16, 2005, "Guidelines for the Investigation of Contacts of Persons with Infectious Tuberculosis"
- CDC 2014. "Self Study Modules on Tuberculosis" Module 8; Contact Investigation
- Bur, S., et al. 2003. "Evaluation of an Extensive Tuberculosis Contact Investigation in an Urban Community and Jail". International Journal of Tuberculosis Lung Disease, 7(12): S417-S423



QUEST.C., DISCUSSION



